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INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference	FOR FURTHER ACTION	See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416).
AJS:AJH:JML:FP18268		
International Application No.	International Filing Date *(day/month/year)*	Priority Date *(day/month/year)*
PCT/AU2003/001058	20 August 2003	20 August 2002

International Patent Classification (IPC) or national classification and IPC

Int. Cl. [7] C07K 14/47; 16/18; C12N 9/12; G01N 33/53; A61K 39/395; A61P 35/00

Applicant

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1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 6 sheets, including this cover sheet.

   ☐ This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

   These annexes consist of a total of sheet(s).

3. This report contains indications relating to the following items:

I	☒	Basis of the report
II	☐	Priority
III	☒	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
IV	☐	Lack of unity of invention
V	☒	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
VI	☐	Certain documents cited
VII	☐	Certain defects in the international application
VIII	☒	Certain observations on the international application

Date of submission of the demand	Date of completion of the report
6 March 2004	18 November 2004
Name and mailing address of the IPEA/AU	Authorized Officer
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INTERNATIONAL PRELI[redacted]ARY EXAMINATION REPORT

[redacted]ternational application No.
PCT/AU2003/001058

I. Basis of the report

1. With regard to the elements of the international application:*

[X] the international application as originally filed.

[ ] the description, pages , as originally filed,
pages , filed with the demand,
pages , received on with the letter of

[ ] the claims, pages , as originally filed,
pages , as amended (together with any statement) under Article 19,
pages , filed with the demand,
pages , received on with the letter of

[ ] the drawings, pages , as originally filed,
pages , filed with the demand,
pages , received on with the letter of

[ ] the sequence listing part of the description:
pages , as originally filed
pages , filed with the demand
pages , received on with the letter of

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.
These elements were available or furnished to this Authority in the following language which is:

[ ] the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).

[ ] the language of publication of the international application (under Rule 48.3(b)).

[ ] the language of the translation furnished for the purposes of international preliminary examination (under Rules 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

[ ] contained in the international application in written form.

[ ] filed together with the international application in computer readable form.

[ ] furnished subsequently to this Authority in written form.

[ ] furnished subsequently to this Authority in computer readable form.

[ ] The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

[ ] The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished

4. [ ] The amendments have resulted in the cancellation of:

[ ] the description, pages

[ ] the claims, Nos.

[ ] the drawings, sheets/fig.

5. [ ] This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).**

* *Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17).*

** *Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report*

III. Non-establishment of opinion with regard to novelty, inventive step and industrial applicability

1. The questions whether the claimed invention appears to be novel, to involve an inventive step (to be nonobvious), or to be industrially applicable have not been examined in respect of:

☐ the entire international application,

☒ claims Nos: **15, 16, 18 and 19**

because:

☐ the said international application, or the said claims Nos. relate to the following subject matter which does not require an international preliminary examination *(specify)*:

☐ the description, claims or drawings *(indicate particular elements below)* or said claims Nos. are so unclear that no meaningful opinion could be formed *(specify)*:

☐ the claims, or said claims Nos. are so inadequately supported by the description that no meaningful opinion could be formed.

☒ no international search report has been established for said claim Nos. **15, 16, 18 and 19**

2. A meaningful international preliminary examination cannot be carried out due to the failure of the nucleotide and/or amino acid sequence listing to comply with the standard provided for in Annex C of the Administrative Instructions:

☐ the written form has not been furnished or does not comply with the standard.

☐ the computer readable form has not been furnished or does not comply with the standard.

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims	YES
	Claims 1-25	NO
Inventive step (IS)	Claims	YES
	Claims 1-25	NO
Industrial applicability (IA)	Claims 1-25	YES
	Claims	NO

2. Citations and explanations (Rule 70.7)

The following documents identified in the International Search Report have been considered for the purposes of this report:

D1 Proc Am Assoc for Cancer Research (March, 2002)
D2 ibid (2001)
D3 WO 1997/23625
D4 Trends in Cell biology (1999)
D5 US 6177273

Novelty (N) and Inventive Step (IS) Claims 1-25

The present invention relates to a marker for cancer and use of this marker in methods of diagnosis and monitoring and treatment of cancer.

Claim 1 recites a claim to a cell-free Immunoreactive Integrin Linked Kinase (ILK). Claim 2 is appended to claim 1 and recites the 59 kDa kinase.

Claim 6 recites a method of detection of cancer comprising determining the presence or absence of irILK in a sample of a biological fluid.

However, it appears that the prior art documents D1-D5 clearly disclose and teach the present invention.

D1 discloses and teaches the involvement of integrins, including ILK in cancer cells proliferation. The subject matter of the cancer cells include ovarian cancer. Therefore claims 1 and 19 and the appended claims are anticipated by D1.

D2 discloses and teaches the implication of ILK in ovarian cancer cells. Moreover, the 59kDa kinase, the subject matter of claim 2 of the present invention, is clearly disclosed in D2.

D3 discloses and teaches ILKs and their role in cell modulation. The 59kDa protein is also disclosed at page 6.

D4 discloses and teaches ILKs and the 59kDa protein kinase, and its role in signal transduction, and its association with tumorigenesis (p320).

D5 discloses and teaches ILKs and its over-expression in certain tumours (column 1).

(*..continued in Supplemental Box*)

VIII. Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

Claims 15, 16 and 18 are not fully supported by the description.

These claims define "agents" which are capable of modulating ILK. However, the structural features of the agents are not defined.

Therefore these claims are not fully supported by the description.

Supplemental Box

(To be used when the space in any of the preceding boxes is not sufficient)

Continuation of Box V

The issue is whether the kinase of the present invention in the cell-free form is the same as the kinase of the prior art or a different kinase to its intracellular form, or is it the same or similar kinase in a different environment.

It would appear from the prior art documents D1-D4 that the kinase of the prior art is similar to or the same as the kinase of the present invention in relation to the molecular weight of 59 kDa of these two kinases. Further, the kinase is used for the detection of cancer, including ovarian cancer (see D1 and D2), the subject mater of the present invention.

The applicant submits that none of the documents D1-D5 disclose or suggest a cell-free immunoreactive form of ILK. It seems the invention is based on the fact that a kinase exists outside of cells. The data submitted by the applicant relates to the ability of commercially available antibodies (polyclonal) to cytoplasmic ILK to bind irILK. The results suggest that all of the antibodies tested bound the cytoplasmic form of ILK but only one, Rabbit polyclonal ILK bound irLK under the same conditions. These results may at best suggest that the cell-free form of the kinase may be different from the intracellular form. However, it may also be that only some small portion of the cell-free form of kinase, or its orientation in cell-free form, is somehow different from the known kinases to enable at least one of the epitopes to bind to the antibodies. However, the kinase needs to be both novel and inventive.

The applicant needs to distinguish the kinase of the present invention from the prior art kinase as disclosed in D1-D4. Identification and distinction of the cell-form of kinase by sequencing data may resolve this issue. Further, the applicant may obtain protection of the use and method claims 5-10 and 13-25 if the kinase is different from the prior art kinase.

In the absence of any sequence data of the ILK and properties of this ILK that are distinct from the prior art, claims 1-25 are not novel.

Further, it would appear that the skilled addressee would be led to other aspects of the invention in respect to the method and kit claims as a matter of routine, following the teaching in the art according to any one of D1-D5.

Therefore the invention as defined in claims 1-25 is not novel and lacks an inventive step.